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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/624,901	07/23/2003	Yasunori Yamamoto	67471-021	6747

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MCDERMOTT WILL & EMERY LLP
600 13TH STREET, N.W.
WASHINGTON, DC 20005-3096

EXAMINER

LAI, VINCENT

ART UNIT	PAPER NUMBER
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2181

MAIL DATE	DELIVERY MODE
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06/25/2007

PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary

Application No.

10/624,901

Applicant(s)

YAMAMOTO, YASUNORI

Examiner

Vincent Lai

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 23 July 2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-16 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-16 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 23 July 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
- 1) ☒ Certified copies of the priority documents have been received.
 - 2) ☐ Certified copies of the priority documents have been received in Application No. _____.
 - 3) ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date 7-23-2003.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: _____.

DETAILED ACTION

Information Disclosure Statement

1. The information disclosure statement (IDS) submitted on 23 July 2003 was considered by the examiner.

Priority

2. Receipt is acknowledged of papers submitted under 35 U.S.C. 119(a)-(d), which papers have been placed of record in the file.

Specification

3. The abstract of the disclosure is objected to because of its length. The abstract is approximately 153 words and the word limit of the abstract is 150. It is suggested that the reference numbers be deleted to correct this objection. Correction is required. See MPEP § 608.01(b).
4. The lengthy specification has not been checked to the extent necessary to determine the presence of all possible minor errors. Applicant's cooperation is requested in correcting any errors of which applicant may become aware in the specification.

Claim Objections

5. Claims 4 and 8 objected to because of the following informalities: The first paragraph of the claims appears to be grammatically incorrect. It is assumed the first paragraph should read, "...when [executing] a call instruction for calling the predetermined function." Appropriate correction is required.

6. Claims 4, 5, 8, and 9 are objected to under 37 CFR 1.75(c), as being of improper dependent form for failing to further limit the subject matter of a previous claim. Applicant is required to cancel the claim(s), or amend the claim(s) to place the claim(s) in proper dependent form, or rewrite the claim(s) in independent form.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

7. Claims 1-16 are rejected under 35 U.S.C. 102(b) as being anticipated by Morrin, II (U.S. Patent # 3,987,412) herein referred to as Morrin in view of the Examiner's use of inherency.

As per **claim 1**, Morrin discloses an information processing apparatus including a processor that has at least one register (See figure 4: There exists a number of

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registers) and performs processing according to a machine language program (Processors inherently must perform processing according to machine language program), the register retaining data used in computation (Registers inherently retain data used in computation), the information processing apparatus comprising:

a compression judgment unit operable to judge whether the machine language program has information indicating that the data retained in the register should be compressed and then saved to a stack memory in response to call of a predetermined function (See column 8, lines 52-55: A border in a picture indicates what data should be compressed); and

a save unit operable to, when the judgment by the compression judgment unit is affirmative, compress and then save the data retained in the register to the stack memory in response to call of the predetermined function (See column 7, lines 35-58: A stack memory is used to save data on compression).

As per **claim 2**, Morrin discloses the information processing apparatus of claim 1, further comprising: a decompression judgment unit operable to judge whether or not there is decompression information indicating that the data saved in the stack memory should be decompressed and then restored to the register in response to termination of the call of the predetermined function (See column 8, lines 47-62: Deciding whether decompression is needed is done in a similar fashion as compression); and

a restore unit operable to, when the judgment by the decompression judgment unit is affirmative, decompress and then restore to the register the data saved in the

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stack memory in response to termination of the call of the predetermined function (See column 8, lines 47-62: Decompression restores the original data).

As per **claim 3**, Morrin discloses the information processing apparatus of claim 2, wherein the decompression judgment unit judges whether the machine language program has the decompression information (See column 8, lines 47-62: Deciding whether decompression is based on whether a border is present and thus the program would recognize whether there is such a border).

Claims 4 and 5 are rejected for reasons similar to that found in the rejection of claims 1 and 2.

As per **claim 6**, Morrin discloses the information processing apparatus of claim 2, wherein the save unit, when compressing and saving the data retained in the register to the stack memory, associates the decompression information with compressed data resulting from compressing the data retained in the register, and saves the decompression information and the compressed data in association to the stack memory (See column 7, lines 35-58: A stack memory is used to save data on compression and original data information is saved so compressed data can be fully restored),

the decompression judgment unit judges whether the stack memory has decompression information that is associated with data saved in the stack memory (See

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column 8, lines 47-62: Deciding whether decompression is needed is done in a similar fashion as compression), and

the restore unit, when the judgment by the decompression judgment unit is affirmative, decompresses and then restores to the register the data associated with the decompression information in response to termination of the call of the predetermined function (See column 8, lines 47-62: Decompression restores the original data).

As per **claim 7**, Morrin discloses the information processing apparatus of claim 6, wherein the save unit comprises:

a data conversion subunit operable to convert first data retained in the register into second data according to a predetermined algorithm (See column 8, lines 52-55: A compression is considered a conversion);

a comparison subunit operable to compare the data size of the second data with a threshold value that shows compression efficiency (See column 8, lines 52-55: Data is compressed accordingly); and

a selective save subunit operable to, when the data size of the second data is smaller than the threshold value, save the second data to the stack memory; and when the data size of the second data is greater than the threshold value, save the first data to the stack memory (See column 11, lines 41-53: Morrin recognizes size considerations when using the stack memory).

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Claims 8 and 9 are rejected for reasons similar to that found in the rejection of claims 1 and 2.

Claim 10 is rejected for reasons similar to the rejection of claim 1. Claim 10 is the method used in conjunction with the apparatus of claim 1.

As per **claim 11**, Morrin discloses a program conversion apparatus comprising:
an acquisition unit operable to acquire an input program that includes one or more functions (This a fetch unit, which is an inherent unit in all processors);

a judgment unit operable to judge, from the input program, whether, in response to call of a predetermined function, data retained in at least one register of a processor should be compressed and then saved to a stack memory, or should be saved to the stack memory without being compressed (See column 8, lines 52-55: A border in a picture indicates what data should be compressed); and

a conversion unit operable to, when the judgment unit has judged that the data should be compressed and then saved, convert the input program into an output program that includes indication information (See column 8, lines 52-55: A compression is considered a conversion), the indication information indicating, to the processor, that the data retained in the register should be compressed and then saved to the stack memory (See column 7, lines 35-58: A stack memory is used to save data on compression).

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As per **claim 12**, Morrin discloses the program conversion apparatus of claim 11, wherein the judgment unit includes:

a detection subunit operable to detect a stack access function in the input program, the stack access function referring to the stack memory in which the data in the register have been saved (See column 7, lines 35-58: A stack memory is used to save data on compression and original data information is saved so compressed data can be fully restored),

and the judgment unit judges that the data retained in the register should be saved to the stack memory without being compressed in response to call of any of the stack access function and functions that position higher order than the stack access function in a hierarchical structure of functions included in the input program (See column 8, lines 52-55: A border in a picture indicates what data should be compressed).

As per **claim 13**, Morrin discloses the program conversion apparatus of claim 11, wherein the judgment unit includes:

a pre-specification detection subunit operable to detect a pre-specified function in the input program, the pre-specified function being a function to which information indicating that the data retained in the register should be compressed and then saved to the stack memory has been added in advance (See column 8, lines 52-55: A border in a picture indicates what data should be compressed is detected),

and the judgment unit judges that the data retained in the register should be compressed and then saved to the stack memory in response to call of the pre-specified

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function (See column 8, lines 52-55: A border in a picture indicates what data should be compressed).

As per **claim 14**, Morrin discloses the program conversion apparatus of claim 11, wherein the judgment unit includes:

a nest information creation subunit operable to create nest information that shows a hierarchical structure of functions included in the input program (See column 7, lines 35-41: Nesting is used in the Morrin invention),

and when the predetermined function includes therein a subroutine, the judgment unit judges whether, in response to call of the predetermined function, the data retained in the register should be compressed and then saved to the stack memory, or should be saved to the stack memory without being compressed, based on the nest information (See column 8, lines 52-55: A border in a picture indicates what data should be compressed).

As per **claim 15**, Morrin discloses the program conversion apparatus of claim 11, wherein the conversion unit includes:

a compression information addition subunit operable to add, to a call instruction for calling the predetermined function, information indicating to the processor that the data retained in the register should be compressed and then saved to the stack memory when the predetermined function is called (See column 8, lines 52-55: A border that is to be added in a picture indicates what data should be compressed is detected); and

a decompression information addition subunit operable to add, to a return instruction for terminating the call of the predetermined function, information indicating to the processor that the data saved in the stack memory should be decompressed and then restored to the register when the call of the predetermined function is terminated (See column 8, lines 47-62: Deciding whether decompression is needed is done in a similar fashion as compression).

As per **claim 16**, Morrin discloses the program conversion apparatus of claim 11, wherein the conversion unit includes:

a compression information addition subunit operable to add, to the predetermined function, information indicating to the processor that the data retained in the register should be compressed and then saved to the stack memory when a process for the predetermined function starts (See column 8, lines 52-55: A border in a picture indicates what data should be compressed); and

a decompression information addition subunit operable to add, to the predetermined function, information indicating to the processor that the data saved in the stack memory should be decompressed and then restored to the register when the process for the predetermined function finishes (See column 8, lines 47-62: Deciding whether decompression is needed is done in a similar fashion as compression).

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Conclusion

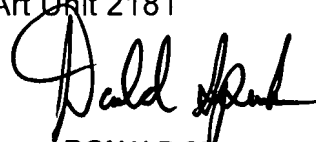
Any inquiry concerning this communication or earlier communications from the examiner should be directed to Vincent Lai whose telephone number is (571) 272-6749. The examiner can normally be reached on M-F 8:00-5:30 (First BiWeek Friday Off).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Donald Sparks can be reached on (571) 272-4201. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

vi
June 16, 2007

Vincent Lai
Examiner
Art Unit 2181



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